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ASSIGNMENT BOOKLET 3A

MAT2037 Pure Mathematics 20
Module 3: Section 1 Assignment and Section 2 Assignment

FOR STUDENT USE ONLY	
Date Assignment Submitted: _____	(If label is missing or incorrect) Student File Number: _____
Time Spent on Assignment: _____	Module Number: _____

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Assigned Teacher: _____

Assignment Grading: _____

Graded by: _____

Date Assignment Received:

Student's Questions and Comments

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- Has your work been reread to ensure accuracy in spelling and details?
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Pure MATHEMATICS 20

Module 3
Quadratics
Assignment Booklet 3A

Learning Technologies Branch

Alberta LEARNING

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Section 1 Assignment	25	
Section 2 Assignment	25	
	50	

Teacher's Comments

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Parents	
General Public	
Other	

Pure Mathematics 20
Module 3: Quadratics
Assignment Booklet 3A
Learning Technologies Branch
ISBN 0-7741-1899-7

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ASSIGNMENT BOOKLET 3A
PURE MATHEMATICS 20: MODULE 3
SECTION 1 ASSIGNMENT AND SECTION 2 ASSIGNMENT

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

This Assignment Booklet is worth 50 marks out of the total 100 marks for Module 3.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate topic.

Be sure to proofread each assignment carefully.

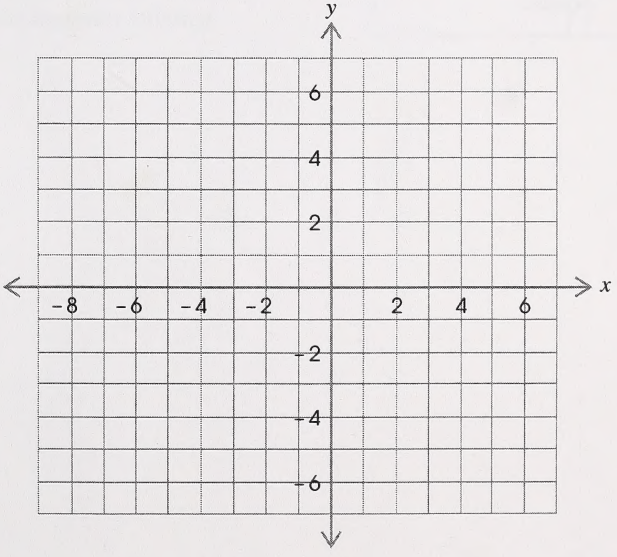
Section 1 Assignment: Quadratic Functions

25

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

4

1. a. Draw the graphs of $y = 0.5x^2$, $y = 0.5x^2 - 3$, $y = 0.5(x+4)^2$, and $y = 0.5(x+4)^2 - 3$ on the grid provided.



(4)

b. Complete the table for the functions given in question 1.a. For the last column, state whether the function has a maximum or minimum value and what that value is.

	Vertex	Axis of Symmetry	Domain	Range	Maximum/ Minimum
$y = 0.5x^2$					
$y = 0.5x^2 - 3$					
$y = 0.5(x+4)^2$					
$y = 0.5(x+4)^2 - 3$					

(2)

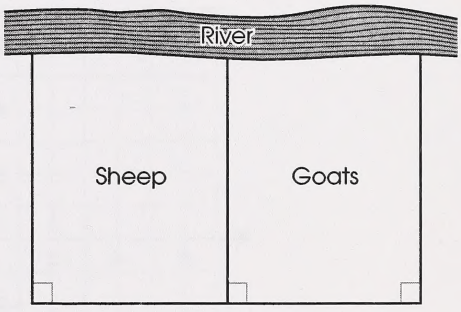
2. The graph of a quadratic function f is the graph of $y = -2x^2$ translated 4 units to the left and 6 units down. What is the equation of function f?

(4)

3. Determine the maximum or minimum value of $y = -3x^2 + 12x - 7$ by completing the square.

(3) **4.** Write an equation for a parabola with vertex $(-2,4)$, and passing through $(-1,8)$.

(6) **5.** Ms. Brown has 200 m of fencing with which she intends to construct a rectangular enclosure along a river where no fencing is needed. She plans to divide the enclosure into two parts (as shown) to separate her sheep from her goats.



What should be the dimensions of the enclosure if its area is to be a maximum? Show a complete algebraic solution.

(2) **6.** Use a graphing calculator to estimate the x-intercepts of $y = \sqrt{3}x^2 - 5x + 0.2$ to the nearest hundredth.

_____

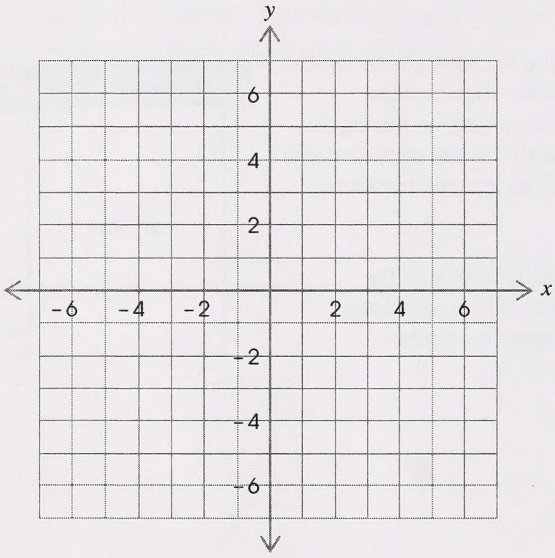
_____

(25)

Section 2 Assignment: Quadratic Equations

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

(4) **1.** Solve $x^2 - 3x = 4$ by graphing. Check your answers.

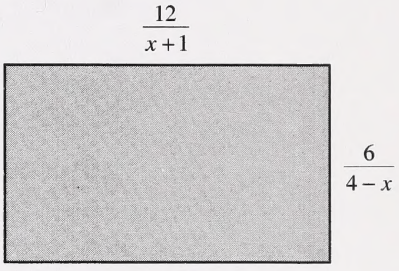


(2) **2.** Describe the roots of a quadratic equation if the graph of the related quadratic function is tangent to the x-axis.

_____

_____

(4) **3.** The rectangle given has a perimeter of 14 units. Find the value(s) of x by **factoring** a quadratic equation.



(2)

4. The period of a pendulum is the time it takes to swing back and forth, returning to its original position. The relationship between the period, T (in seconds), and the length of the pendulum, L (in metres), is as follows:

$$T^2 - 4L = 0$$

Correct to the nearest tenth of a second, what is the period of a pendulum 3 m long?

(5)

5. Solve $2x^2 - 4x - 1 = 0$ by completing the square. Express your answer in simplest radical form, and check your answer.

(4)

6. A rectangular garden measures 5 m $\times$ 4 m. Its area is to be tripled by extending each dimension by the same amount. Correct to the nearest tenth of a metre, how much should each dimension be extended?

(4)

7. A ball is thrown straight up. Its height, h (in metres), after t seconds is given by $h = -5t^2 + 10t + 2$. To the nearest tenth of a second, when is the ball 6 m above the ground? Explain why there are two answers.

Pure Mathematics 20
Assignment Booklet 3A
Module 3
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ASSIGNMENT BOOKLET 3B

MAT2037 Pure Mathematics 20
Module 3: Section 3 Assignment and Final Module Assignment

FOR STUDENT USE ONLY	
Date Assignment Submitted: _____	(If label is missing or incorrect)
Time Spent on Assignment: _____	Student File Number: _____
	Module Number: _____

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Assigned Teacher: _____

Assignment Grading: _____

Graded by: _____

Date Assignment Received:

Student's Questions and Comments

Apply Module Label Here

Name
Address
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Teacher's Comments

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Pure MATHEMATICS 20

Module 3

Quadratics

Assignment Booklet 3B

Learning Technologies Branch

Alberta LEARNING

FOR TEACHER'S USE ONLY

Summary

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Final Module Assignment	25	
	50	

Teacher's Comments

This document is intended for	
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Teachers	✓
Administrators	
Parents	
General Public	
Other	

Pure Mathematics 20
Module 3: Quadratics
Assignment Booklet 3B
Learning Technologies Branch
ISBN 0-7741-1900-4

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ASSIGNMENT BOOKLET 3B
PURE MATHEMATICS 20: MODULE 3
SECTION 3 ASSIGNMENT AND FINAL MODULE ASSIGNMENT

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Be sure to proofread each assignment carefully.

(25)

Section 3 Assignment: The Quadratic Formula

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

(3)

1. Solve $3x^2 - 2x = 2$ using the quadratic formula. Express your answer in simplest radical form.

(4) **2.** The path of a basketball can be modelled by the equation $h(d) = -0.13d^2 + d + 2$, where $h(d)$ is the height (in metres) of the basketball and d is the horizontal distance (in metres) from the player. How far does the ball travel horizontally before hitting the floor? Round your answer to the nearest tenth of a metre.

(3) **3.** Solve $4x^2 - 2x = -1$ for its complex roots. Simplify your answer.

4. Simplify the following expressions involving complex numbers.

(2) **a.** $(3+2i)-(-7-i)$

(2) **b.** $(3+2i)(-7-i)$

(2) **c.** $(3-2i)^2$

(3) **5.** Use the discriminant to determine the nature of the roots of $x^2 - 9x = -25$.

(3) **6.** Determine the value(s) of k for which $x^2 + (k-2)x - 2k = 0$ has equal and real roots.

(3) **7.** Determine the values of k if the graph of $y = 2x^2 - 2x + 3k$ intersects the x-axis at two distinct points.

(25)

Final Module Assignment

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

1. For the function $y = 2x^2 + 5x - 3$,

(2) **a.** determine the x-intercepts

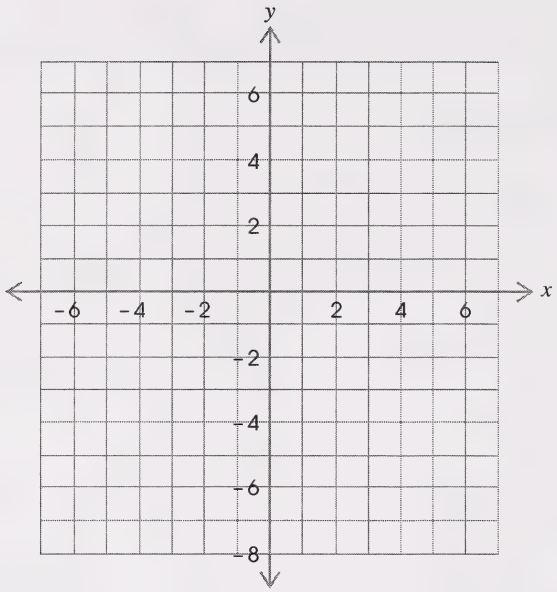
(3) **b.** determine the vertex

(1) **c.** determine the axis of symmetry

(1) **d.** determine the maximum or minimum value, stating whether it is a maximum or minimum

(1) **e.** determine the range

(2) **f.** graph the function



(3) **2.** Determine the equation of the parabola that opens downward from $(1,-3)$ and is congruent to $y=2(x-4)^2$.

(4) **3.** Solve $1-\frac{2}{x}=\frac{2}{x+2}$. Express your answer in simplest radical form.

(3) **4.** Find the x-intercepts of $y=3x^2-6x$ by factoring.

(3) **5.** Solve $3x^2 - 4 = 0$. Express your answer in simplest radical form.

(2) **6.** The vertex of a parabola is $(1, 2)$. One x-intercept is $1+\sqrt{5}$. What is the other x-intercept? Explain.

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Assignment Booklet 3B
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